UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Advanced Subsidiary Level and GCE Advanced Level

MARK SCHEME for the May/June 2011 question paper

for the guidance of teachers

9713 APPLIED ICT

9713/13 Paper 1 (Written A), maximum raw mark 80

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

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UNIVERSITY of CAMBRIDGE
International Examinations

1 (a) **Four** from:

Have greater personal contact with colleagues
Can discuss ideas with colleagues
Can see the manager daily
Have greater chance to impress manager giving better job prospects
Home based telework is inappropriate for some people,
Many homes are not well equipped for home working/difficult to find a work space
Easier to concentrate on work as there are fewer distractions.
Don't have to worry about the security of their data. [4]

(b) (i) **Three** from:

Fax machine is connected to a phone line
Karl's/other person's fax machine number is dialled
The drawing would be scanned…
…then transmitted through phone lines
And printed by Karl's/other person's fax machine [3]

(ii) **Two** from:

Speed of transmission is slow
The quality of the drawing will not be good
Karl can only receive one design at a time
Worker sending design might be unable to as the line might be busy [2]

(c) **Four** from:

Flyers are small single page (often A5) but Posters are much larger (possibly A0)
Flyers are leaflets given out to individuals/households/Posters are put in strategic locations
Flyers usually produced using DTP/Word processing software/Posters more likely to be produced using Presentation software
Flyers produced using standard printer/Posters require specialised printer
Posters will not necessarily be noticed by everybody/are in a fixed location
Flyers can be delivered to all households in a locality
Easier to target your audience with flyers
Would want to use both as posters can be aimed at a much wider audience than a local area
Flyers are often just thrown away and ignored/posters are more permanent/difficult to ignore once noticed
Flyers can take longer time to deliver once printed than it takes to put up a poster [4]

(d) (i) **Three** from:

Touch screen to input required temperature
Sensor to input temperature
ADC to convert analogue data to digital
Actuator switches radiator on
LED screen to display actual/required temperature [3]

(ii) **Three** from:

User inputs required temperature using touch screen
Temperature sensor is continually monitored by microprocessor
ADC converts temperature reading to a digital value
Microprocessor compares this reading with the preset value
If the value is lower than preset value microprocessor sends a signal to an actuator
Actuator switches radiator on
If the value is higher then no signal is sent [3]

2 **(a)** **Two** from:

Computer to process the calls/look up customer information/to record orders
Monitor to display customer/call details
Telephone set/headset to speak with/listen to customers
Telecom switch to connect individual computers to the server
Keyboard to type up details of the call/action taken [2]

(b) **Three** from:

Used to combine the data and voice input to the system.
Calling-line information display caller's number, number dialled
Customer account information can be displayed
On-screen phone control. Answer, hang up, hold, conference
Software sends commands from a user's computer to a telephony server
Software directs phone call to appropriate operator [3]

(c) **One** from:

Database to hold records of calls/to provide link to stock/orders database
Database software to enable customer orders to be input to the main computer database [1]

(d) **Four** from:

Staring at a computer screen continuously can cause problems with one's sight
Typing at a keyboard continuously can cause RSI
Gripping a mouse and repetitive clicking can cause carpal tunnel syndrome/RSI
Sitting in the same position/with wrong posture all day can cause lower back pain
Staring at a computer screen all day can cause eye strain/headaches
Poor positioning of screen can cause upper back/neck/shoulder pain/eyestrain/headaches
Glare from screen can cause eye strain/headaches [4]

3 (a) **Four** from:

They may need to send out monthly statements
Statements may be batch processed
Orders may be on a transaction file for a short time
Transaction file will be sorted in customer number order
Master file will need to be in sequential order for batch processing
For ease of updating using transaction file
Customer may phone to enquire about progress of an order
Fast access to data will be required
Indexes will make sequential file faster to search [4]

(b) **Four** from:

Description of use of two of: passwords, user ids and memorable words
description of encryption
Description of SSL or TLS
Use of drop down menus to prevent access by keyloggers
Description of anti-spyware software
Description of firewall [4]

(c) **Four** from:

Don't have to rent/build large call centres so save money
They can employ fewer staff and pay less in staff wages
Don't have to pay as much in running costs such as electricity, heating/air conditioning and lighting at call centres.
Because of their lower costs, they can offer cheaper goods thus attracting more customers.
Shoppers can shop 24/7 so company could gain increased profits
Internet more likely to attract customers worldwide increasing profits [4]

(d) **Four** from:

Less personal touch so it is harder to sell other services
Potential for fraud so company loses money
Interception of account information by hackers so company loses money
Running costs/initial cost such as having to pay website developers.
Initial costs such as buying the hardware when starting up.
May need to retrain staff which is costly/time consuming [4]

(e) **Four** from:

Lower wages due to fewer hours worked
Lower wages as part time workers tend to be on lower rates of pay
May have to find another job to supplement income
Less likely to receive in job training
Very difficult to become part of company's pension scheme
May have to work unsociable hours/shifts
More free time/more leisure time/more time to spend with family due to fewer hours worked
[4]

4 **Four** from:

Identifying short- and long-term targets
Set deadlines for the completion of each task
Short-term targets are very motivational when achieved
Decide on the relative importance of each target
Devoting appropriate resources/workers (to achieving that target)
Planning the steps needed (to produce an item)…
…using Gantt charts…
…to represent parallel and sequential tasks…
…to help ensure sequential tasks are completed in time for the next one
…to help ensure parallel tasks finish at the same time
Making correct decisions will affect the time taken at each stage
Use of ICT – faxes, telephones, computers
Use of time management software…
…to organise meeting times/appointments
…to arrange workload
…monitoring progress by seeing how long a task has taken so far/see how long tasks should take [4]

5 **Six** from:

ICT make lessons more interesting/entertaining
ICT make lessons more varied
Internet allows students to investigate ideas
Internet allows students to carry out research
Neatness of students work makes it easier for teacher to mark
ICT provides more interactive learning environment
ICT resources can help students with special needs
Teachers have more varied teaching aids/can make use of multimedia in lessons
Teachers can use/produce computer based tests/can use ICT to assess students' performance
Teachers can use spreadsheets/databases to record test scores/produce graphs of progress
Easier to compare class/students performance
Tests can be computer-marked
Computers can provide feedback on tests [6]

6 **(a)** **Four** from:

Can see which documents relate to input information and output information
This enables the analyst to produce documentation of the system
This can be done whilst producing a data flow diagram
The volume of data could be determined….
The format of the input and output can be determined…
Each part of the system needs to be examined to see what specific inputs, outputs and processing are required
For example:
the input would be the details of the students
the processing would be the calculation of the test scores/percentages
the output would be lists of students and their test scores. [4]

(b) **Five** from:

Must meet user requirements
Will need to be set out so that it is easy to use
Will need to be attractive to look at
Will need to limit the possibility of inaccurate data being entered
Teachers should not be distracted by an over-elaborate screen design
Must contain guidelines to the worker on how to fill in any data entry forms
Must allowing them to navigate from one screen to another without any difficulty
Elements of file structure such as field length will affect the field spacing
Elements of file structure such as number of fields will affect the font size/number of screens
[5]

(c) **Three** matched pairs from:

Testing (each module) with normal data including appropriate example
If error produced – description of improvement required

Testing (each module) with live data including description and examples
If difference between live and actual results – description of improvement required

Testing (each module) with abnormal data including appropriate example
If error not produced – description of improvement required

Testing (each module) with extreme data including appropriate example
If error produced – description of improvement required

Testing whole system including examples of data
Description of improvements required [6]

(d) **Six** from:

A description and purpose of the software
- what the software does and its features
- the reasons for choosing those pieces of existing software modules
- that were used instead of the programmer having to write code.

Input and output data formats that have been used
Program flowcharts that were produced at the design stage
Program listing
- a complete copy of the code used
- annotation explaining what each module of code does

Notes that will help any future programmer to make modifications to the system. [6]